

**What Is Claimed Is:**

1. A node system for increasing the capacity of a wavelength division multiplexing (WDM) system, comprising:

means for interleaving a plurality of optical signals received therein into a  
5 predetermined number of channels;

at least one demultiplexer coupled to one of the output of said channels for demultiplexing said optical signals received via said one output into a prescribed number of channels;

at least one multiplexer for multiplexing the respective demultiplexed optical  
10 signals outputted from said prescribed channels of said demultiplexer; and,

means for deinterleaving said optical signal outputted from said multiplexer to be forwarded to a next node.

2. A node system for increasing the capacity of a wavelength division  
15 multiplexing (WDM) system, comprising:

means for interleaving a plurality of optical signals received therein into a predetermined number of channels;

a plurality of demultiplexers coupled to the respective output of said predetermined channels for demultiplexing the output optical signal from said respective channel into a  
20 prescribed number of channels;

a plurality of multiplexers for multiplexing the respective demultiplexed optical signals from said plurality of demultiplexers; and,

means for deinterleaving said optical signals outputted from the respective output of said plurality of multiplexers to be forwarded to a next node.

3. A method for increasing the capacity of a wavelength division multiplexing (WDM) system of the type having a pair of interleaver and deinterleaver and at least one pair of multiplexer and demultiplexer disposed between said interleaver and said deinterleaver, the method comprising the steps of:

upon receiving a plurality of optical signals from different sources by said interleaver, interleaving said received optical signals into a predetermined number of channels;

demultiplexing, by said demultiplexer, said interleaved optical signals received from the respective said predetermined channel into a prescribed number of channels;

multiplexing, by said multiplexer, said demultiplexed optical signals received from the respective said prescribed channel of said demultiplexer; and,

deinterleaving said multiplexed optical signals into one transmission channel to be forwarded to a next node.